## COMP 189: Computers and Society Syllabus

## Overview

An informed, engaged individual, employee, and citizen must understand how digital and software technologies they encounter (e.g., the internet, search engines, and RFID passports) impact and alter established social phenomena such as ownership, safety, friendship, and privacy. This course empowers you to be engaged in a range of issues where technology is heavily involved: from personal lifestyle choices such as online banking and bitcoin investments to government policy debates such as data privacy laws and regulations for search engine behavior.

My goal is for you to leave this class with (1) introductory knowledge of how important and ubiquitous digital and software technologies work and (2) the ability to evaluate and hold a well-reasoned position on a topic of social importance that involves significant technological underpinnings. These are skills that will be valuable in any path you take through our modern and rapidly evolving technology-mediated world.

### Class Schedule

There are two sections for this course. They will cover identical material and all assignments will be the same.

Online, asynchronous: all lectures will be pre-recorded and posted on MyCourses. Any students enrolled in either section of the course is welcome to participate in this section. Videos for the week will be posted by Monday noon (EST). The expectation is that the student will view them by that Thursday, when the homework for that week is posted.

In-person: subject to provincial regulations, lectures will be delivered in person by the In-Person Instructor. Content will be the same as online, but there will naturally be additional opportunities for interacting with an instructor who can answer questions as content is delivered.

Location: LEA 132

Time: 10:05 am-11:25am

The MyCourses page for this course will always have the latest information on whether the in-person class will be held.

### Contact Information

**Lead Instructor**: Professor Derek Ruths

*Office Hours*: See office hour information on the homepage of MyCourses

*Mode of contact:* Please, please **use my office hours as your first line for getting in touch with me**. For emergencies or other personal or private matters, please use my email, [derek.ruths@mcgill.ca](mailto:derek.ruths@mcgill.ca), and start your email title with “[COMP 189]”. If you don’t use this title opener, I can’t guarantee that I will respond to your email quickly (I get a LOT of emails everyday, so if you don’t flag it, I likely won’t see it).

**In-Person Instructor:** Deven Parekh

*Office Hours*: See office hour information on the homepage of MyCourses.

*Mode of contact*: Please use office hours as the primary mode of contact. For urgent or personal matters, please email me at [deven.parekh@mcgill.ca](mailto:deven.parekh@mcgill.ca)

**Teaching Assistants**:

TBD

For office hours, consult the course homepage on MyCourses.

**Homework Submission:**

Through MyCourses, there will be an Assignment area for each assignment due.

## Class Structure

### Resources

There is no textbook for this class. All slides and readings will be posted through MyCourses.

### Grading

Each student’s final grade in this course will be determined by approximately 6 homework assignments. There are no exams.

*Grade calculation.* Each student’s grade will be determined be 100% assignments: the total number of points a student receives over the semester will be divided by the total number of points they could have received on all assignments.

*Assignments.* There will be one assignment every two weeks.

* Timing: it will be assigned on Thursday morning, due 15 days later (on Friday night at 11:59 PM).

#### Late Assignments

If submitting an assignment by the due date presents a problem, contact me as soon as possible to determine whether a late submission can be accommodated. If a later due date has not been arranged, then the late assignment’s final grade will be penalized at 10% per day.

#### Extenuating Circumstances

I want every student in this course to succeed. If unforeseen situations arise that interfere with your ability to complete coursework or devote adequate time to this course, *please contact me as soon as you suspect there could be a problem.* While I cannot guarantee that I will oblige every request and situation, the sooner you notify me of the situation, the sooner we can work to find a way to accommodate any issues you may be dealing with. Please bear in mind that **requests that have waited till the last minute will not be accommodated.**

### Academic Integrity

Except where specifically noted, homework may be discussed with other students and I encourage group work. However, all work (code, writing, and answers) must be the student’s own. Copying another student’s work, in any form, constitutes an act of cheating.

McGill University values academic integrity.  Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see [www.mcgill.ca/integrity](http://www.mcgill.ca/integrity) for more information).

#### Right to Submit Work in English or French

In accord with McGill University’s Charter of Students’ Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

## Schedule

### How do we move information around? (Weeks 1-3)

Besides email, Wikipedia, and YouTube, the internet and cellphone networks provide essential infrastructure for government, business, and the military. Quite literally, they impact every aspect of our lives in ways that are difficult to appreciate because we don’t see them and they work so well (usually).

In recent years, governments and industry have begun trying to figure out how to regulate the internet. This debate is ongoing and potentially will change many aspects of the way we do and can use the internet and cell phones.

* Getting information from here to there (network basics and packet-based routing)
* What is the internet made of?
* Who owns the internet? What rights does ownership entitle companies and governments to?
* Darknets: what is the difference between servers and peer-to-peer networks?
* Am I ever anonymous on the internet?

### How do we work with information? (Weeks 4-7)

Sending information from one computer to another is only part of making that information useful. Spam filters, search engines, and recommendation systems are among the many algorithms that process information and perform a meaningful service. While it may seem obvious at first how these algorithms should work, the details of their inner working often create important social, economic, and political issues. Here we’ll discuss some of the big algorithms that we encounter on a daily basis as well as important issues that they raise.

* Algorithms: how do you tell a computer what to do?
* How are online banking records, Instagram photos, and emails stored?
* How do spam filters work?
* How does a search engine find results? Does it return biased results?
* How does Amazon know what things I might want to buy?

### Keeping information secure (Weeks 9-11)

The same way that we chain up bikes, put money in vaults, and put combo locks on gym lockers, we need to protect digital information: both on our computers and elsewhere. Computer systems store everything from our summer vacation photos to our emails to our bank account information. We expect that these computer systems will keep this information safety and private. Here we discuss what it means for a computer to protect information, when we can feel comfortable that protection is enough, and when that protection should be infringed upon.

* What’s a good password?
* How do hackers steal corporate data?
* Is it safe to do online banking from a Starbucks?
* How does the RIAA catch people pirating music and movies?
* Is behavioral tracking a necessary evil?
* How have government programs like PRISM obtained seemingly private information?
* What is GDPR? Why is it hard for a tech company to be compliant with it?

### Emerging Trends (Week 12-14)

Here we cover a handful of emerging trends in technology that are actively shaping or promise to reshape society: AI, behavioral modeling, and bitcoin. Each holds a great deal of potential for improving governance, commerce, and daily life – but they are not without tradeoffs.

* Why doesn’t Facebook do a better job removing hate speech and bullying content?
* Is bitcoin a reasonable foundation for a world-wide currency?
* How could behavioral modeling improve cities?